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Student Name: _____

Missouri
DEPARTMENT OF ELEMENTARY & SECONDARY
EDUCATION™

End-of-Course Assessment

Algebra I

Pre-Test Performance Event

A shipping company charges $1.20 times the sum, *s*, of the length, width, and height of a package to be shipped. All dimensions are measured in inches. The company also charges $3.00 for processing the package to be shipped.

On the line below, write an equation that the shipping company can use for determining the cost, *C*, for shipping any package.

Equation: _____

Part 1: Maximum Number of Points: 3

Alignment: HSA-CED.A.2

- Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

The Response:

- Demonstrates knowledge of the mathematical concepts and principles to complete the event.
- Demonstrates knowledge and ability to create the equation.

CORRECT RESPONSE:

- $C=1.2(s) + 3$ -OR- $C=1.20(l+w+h) + 3$

Any other equivalent equation, but the student must use "*C*" as the dependent variable. If the student uses any other variables except *s*, *l*, *w* and/or *h*, the student must define them.

3 Points

- Correct equation with correct variables.

2 Points

- Correct expression -OR- Correct equation with incorrect or undefined variables.

1 Point

- Incorrect equations or expression with respect to variables and/or operations.

0 Points

- Blank -OR- Work indicates no mathematical understanding of the task.

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Example Responses:

3 Points

- $C=1.2s + 3$

2 Points

- $1.2(l + w + h) + 3$

1 Point

- $C = 1.2 + 3$

0 Points

- $y = mx + b$

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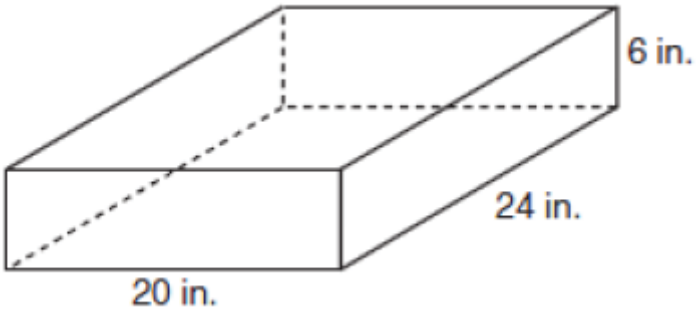
Joe is planning to ship the package shown below to his grandmother. Determine how much Joe will have to pay to ship the package. Show your work in the box below.



Shipping Cost = $ _____

Part 2: Maximum Number of Points: 3

Alignment: HSA-REI.B.3

- Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

The Response:

- Demonstrates knowledge of the mathematical concepts and principles to complete the event.
- Demonstrates knowledge and ability to calculate values in the context of the problem.

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CORRECT RESPONSE:

- $63 - with appropriate work to support this solution.

If the student has mathematically incorrect statements in his or her work then points should be deducted even with a correct response.

3 Points

- Correct value with strong support of the work.

2 Points

- Correct value with weak support of the work -OR- Incorrect value with strong support of the work.

1 Point

- Correct value with no work -OR- Incorrect value with weak support of the work.

0 Points

- Blank -OR- The work indicates no understanding of the mathematical concepts.

Example Responses

3 Points

- $C = 1.2s + 3$
  $= 1.2(20 + 24 + 6) + 3$
  $= 1.2(50) + 3$
  $= 63$

  Shipping Cost = $63

2 Points

- 20 + 24 + 6 = 50 x 1.2 = 60 + 3 = $63

  Shipping Cost = $63

1 Point

- s = (20 + 24 + 6) = 50 x 1.2 = 60

  Shipping Cost = $60

0 Points

- 20 x 24 x 6 = 2,880

  Shipping Cost = $2,880

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Design another box that Joe could use that would cost less than $60.00 to ship and would have the same volume as the box shown above. If each dimension must be a whole number, what are the dimensions of the new box?

***l* = ____ in.**

***w* = ____ in.**

***h* = ____ in.**

Part 3: Maximum Number of Points: 4

Alignment: HSA-CED.A.3

- Represent constraints by equations or inequalities…and interpret solutions as viable or nonviable options in a modeling context.

The Response:

- Demonstrates knowledge of the mathematical concepts and principles to complete the event.
- Demonstrates knowledge and ability to calculate values in the context of the problem.

CORRECT RESPONSE:

- Sample Responses: 20x12x12, 20x8x18, 10x24x12, 10x16x18 (the dimensions may be listed in any order)

The student's response must contain whole numbers.
The student's response must have a shipping value of less than $60.
The student's response must have a volume of 2880 cubic inches.

4 Points

- Correct whole number solutions that will have a volume of 2880 cubic inches and will cost less than $60.00 (values that have all three of the required characteristics).

3 Points

- Values that have two of the three required characteristics.

2 Points

- Values that have one of the three required characteristics.

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1 Point

- Values that do not meet any of the required characteristics -OR- Responses that have a missing value.

0 Points

- Blank

Example Responses

4 Points

- l = 20 in.
- w = 12 in.
- h = 12 in.

3 Points

- l = 2 in.
- w = 2 in.
- h = 12 in.

2 Points

- l = 14.228 in.
- w = 14.228 in.
- h = 14.228 in.

1 Point

- l = 10.5 in.
- w = 30.5 in.
- h = 20.5 in.

0 Points

- Blank

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